Computer Science

SOCIO-TEMPORAL VISUALIZATION OF ON-LINE DISCUSSION FORUMS

Philip R. Johnson
Indiana University – Purdue University Fort Wayne
2101 E Coliseum Blvd.
Fort Wayne, IN 46805
Dr. Beomjin Kim*

On-line social spaces have been established as an information dissemination channel for sharing opinions on a diverse spectrum of topics and in forming a global society unconfined by locale. With the rapidly growing acceptance and application of this medium, these social spaces can quickly become overloaded with contributions and noise. Noise can be defined in this application as messages with little or pointless contribution and threads with minimal activity. Traditional interfaces for bulletin boards show limitations for navigating the currently huge information space effectively because of the extensive navigation time, failure of space utilization, and the lack of information inculcated in the display. Especially lacking in current manifestations of this application is the inability to effectively search through this voluminous data for information.

This study presents a visual interface, which helps readers to understand the social and temporal aspects of a discussion forum, filter out noise in a discussion forum, and to effectively search the discussion forum for information. With the use of several visual attributes, the developed methodology transforms the text-based messages into visual abstractions. Each thread of messages is displayed to the user as a circular shaped drawing object whose size is defined by the total amount of contents of the thread. Utilizing the primary color: red, green, and blue, threads can be classified into one of three temporal eras, and the intensity of the primary color is defined by the popularity of the thread. The circular objects are then displayed on the screen in a concentric ring layout, with the ordering dependent upon the user's choice of either by date, number of messages, number of references, or lifetime. Also, if space is available thread keywords will then be displayed on top of the drawing object. Various other filtering capabilities are also available to users such as subset selection based on layout, date filtering, author filtering, and searching. Searching uses a method entitled Query Fingerprinting to display search term occurrence and distribution with the messages of a thread. This is done by analyzing the distributional behavior of search terms in the messages of threads of which concentration defines the intensity. This color is then painted onto sector whose size is based on the size of the message in a thread.

This visual illustration of a discussion forum allows readers to recognize major subjects of discussions, topical transitions over time, and threads including valuable contents intuitively and swiftly through their perceptual cognition. A pilot experiment has been conducted on a practical discussion forum where the participants have shown a high degree of satisfaction using the developed visual interface for on-line message boards. Although a larger scale usability test is expected in the future, this research shows the feasibility of a visual interface as a search-supporting tool for on-line social spaces and suggests a framework for future directions.